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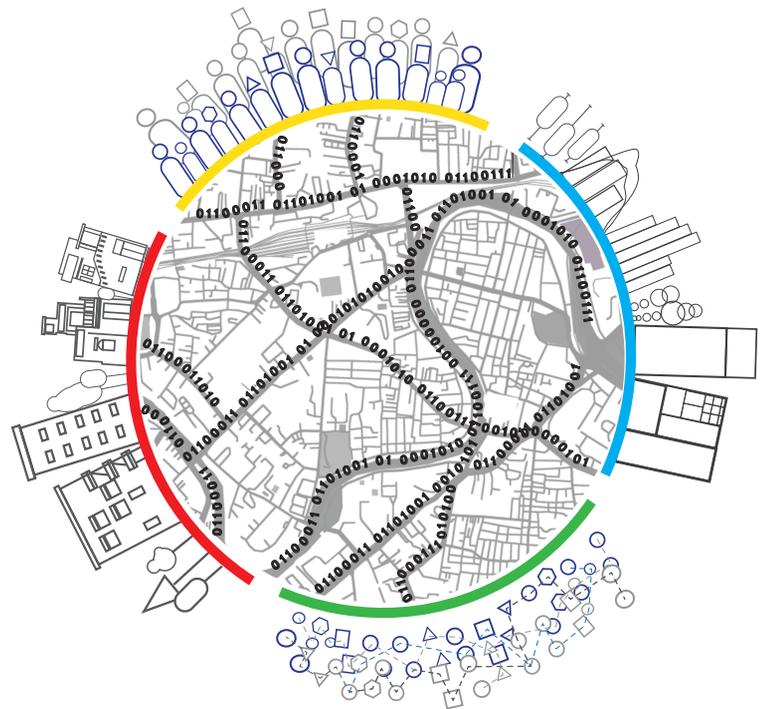


Smart City
MISSION TRANSFORM-NATION

India's First City Data Officer

Recounting our Learnings & Experiences from Pune

CASE STUDY 1 | JULY 2019



POWERED BY

TATA TRUSTS

Data Driven Governance

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ABOUT TATA TRUSTS

Tata Trusts are amongst India's oldest, non-sectarian philanthropic organisations. Since its inception, Tata Trusts have played a pioneering role in transforming traditional ideas of charity and introducing the concept of philanthropy to make a real difference to communities. Through grant-making, direct implementation and co-partnership strategies, the Trusts support and drive innovation in the areas of healthcare and nutrition; water and sanitation; energy; education; rural livelihoods; natural resource management; urban poverty alleviation; enhancing civil society and governance; media, arts, crafts and culture; and diversified employment. The Trusts engage with competent individuals and government bodies, international agencies and like-minded private sector organisations to nurture a self-sustaining eco-system that collectively works across all these areas.

ABOUT DATA DRIVEN GOVERNANCE

The Data Driven Governance (DDG) Initiative of the Tata Trusts works with rural and urban decision making systems to enable inculcation of data as a way of life in the planning and delivery of government schemes – thereby creating significant impact for underserved and marginalized communities. This has been demonstrated through deployment of inclusive data and technology processes at district and city levels, through large scale partnerships with governments, central planning entities, foundations and philanthropies such as the Niti Aayog, Ministry of Housing and Urban Affairs and Tata Steel Rural Development Society.

The Urban Engagements under the DDG Initiative of the Tata Trusts provides directed technology and capacity building support to urban administrations at central and city levels through effective fore-grounding of city data policies, data standardization models, implementation of inclusive open data portals, improved civic engagement and skill building of municipal officials in data and technology practices

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CONTEXT

Keywords: City Data Officer, Smart Cities, Urban Local Bodies, Data Maturity, Competitive Benchmarking

The [Smart Cities Mission](#) (SCM) was launched by the Ministry of Housing and Urban Affairs(MoHUA) in 2015, to cater to the staggering rise of urbanization in India taking an Area Based Development(ABD) approach coupled with Pan-City initiatives, that are implemented through creation of a Special Purpose Vehicle (SPV).

Pune Smart City Development Corporation Limited (PSCDCL) is the SPV for the city of Pune in the state of Maharashtra. In association with Pune Municipal Corporation (PMC) have effectively leveraged the resources provided under the Mission to become frontrunners in the SCM cohort, through implementation of several award winning digital transformation initiatives such as:

- i. Integrated Business Intelligence platform, with seamless two-way flow of information for most departments within the Corporation;
- ii. Integrated Command and Control Centre(ICCC) with embedded IoT enabled devices capturing real time insights for multiple departments such as Environment, Water & Sanitation and Waste Management;
- iii. An active technology enabled citizen's grievance redressal system and;
- iv. An updated [Open Data Portal](#) under the [Open Government Data](#) norms of the Govt. of India

Pune was one of the first cities to sign up for [Tata Trusts'](#) City Data for India Initiative.

The initiative was designed to empower and enable Indian cities to use data as the grammar and vocabulary to script their planning and development strategies. As part of this It received a Platinum, (highest level) under the [ISO 37120](#) framework - Indicators for City Services and Quality of Life, the first international standard on city data certification by the World Council for City Data

Post certification, under the leadership of PMC, Tata Trusts deputed India's first City Data Officer(CDO) to PMC, in partnership with Tata Consultancy Services(TCS). The CDO is a unique leadership role within the city administration, and works with the senior city leadership to tap the potential of municipal datasets to drive data driven decision making, and to seed the data culture within and beyond the Corporation.

The current case study documents the experiences and captures the learnings of the first year of deputation of the CDO in Pune, the first experiment of its kind in India. This has led to the institutionalization of the role of CDO in the Smart City HR Guidelines, which mandates the nomination of a CDO in each of the 100 Smart Cities in India. As on March, 2019, the Ministry of Housing and Urban Affairs has driven the appointment of 100 CDOs across all smart cities from existing municipal structures basis provisions outlined in the DataSmart Cities Strategy.

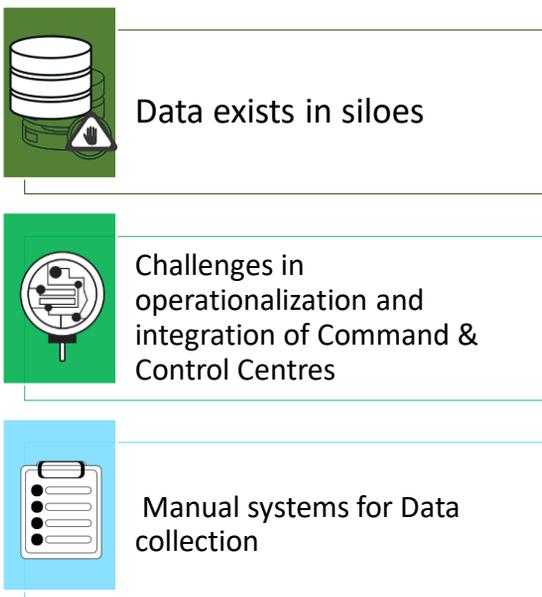
DEPLOYING INDIA'S FIRST CDO

The Challenge

Governance systems in urban India have had deeper interaction with technology-enabled systems and data, than rural administrations. This has been on account of targeted central government urban development programs, such as Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Jawaharlal Nehru National Urban Renewal Mission (JNNURM) and Smart Cities Mission (SCM), with specific budgetary allocations on technology upgradation and integration. In addition, the nationwide initiatives such as the National e-Governance Plan (NeGP), have given way to the more recent Digital India Initiative. A basic assessment of such technology systems & initiatives, and the state of data in Indian ULBs reveal the following:

- i. With legacy systems operating in silos and lack of system integrators, the data collected and maintained is non-standardized and resides in separate databases, reducing operational efficiency of the system at large.
- ii. Some of the identified Smart Cities have deployed ICCCs, with a view to act as Master System Integrators (MSIs) to streamline technology and functional operations of an ULB, across all functional service delivery departments in a city. Operationalization of ICCCs has been a challenge, with gaps in the connecting bridges between the ICCC and relevant ULB department.
- iii. Deployment of dashboards at the municipal level for data integration and visualization, while the departmental functionaries continue to use manual systems for collection of data, is another common issue in Tier II & III cities, and Nagar Panchayats. Limited capacities and budgets with these ULBS, to implement technology systems, historically leading to a collation of unreliable data sets, with no validation and audit systems in place. This affects the data culture and performance monitoring of the Urban Local Bodies(ULB) adversely.

Figure 1: State of Data in ULBs



In the private sector, this role is typically fulfilled by the Chief Data Officer(CDO) – a pivotal member of the C – Suite for organizations worldwide, helping them navigate today's disruptive, dynamic, data intensive world. According to the Chief Data Officer Playbook developed by IBM (2015), a CDO is primarily responsible for the enterprise wide management and use of data as a strategic and competitive asset of the organization.

and decision making platforms run by the IT HOD; and was directly reporting to the Municipal Commissioner. The role involved close coordination with the Heads of Departments and designated nodal officers of every department. The role of the CDO was mandated as per existing ULB norms, and was also required to work with members of the Smart City SPV, the Integrated Command and Control Centre and departments external to the ULB.

This is done in a 3 pronged manner – as a data integrator, business optimizer and market innovator, measured in terms of the impact on data management, organizational efficiency and agility, business outcomes, profitability and revenues.

CDOs in the private sector are now rife, especially in customer facing businesses, and make for a compelling case in the industry, as research shows that organizations with CDOs are more business driven, analytically mature and outperform their peers.

In the case of limited capacities within governance setups, in this case, Urban Local Bodies, to cater to the unmet yet critical data needs, both from the perspective of better administration and service delivery, and to ensure transparency and accountability in functional and budgetary operations, it becomes imperative to put in place a dedicated resource within the ULB with a view to drive the data engagement and management strategies of the corporation.

The Solution

A. Dedicated Resource to support Indian Cities on Data Management

The Pune Municipal Commissioner demonstrated great foresight in highlighting the need for a dedicated City Data Officer(CDO) beyond the existing consultancies and vendors providing technology support to the Corporation.

In response, Tata Trusts partnered with Tata Consultancy Services(TCS) to depute a resource with the right mix of attitude, experiences and willingness to work towards systems strengthening in the data governance context.

The role had no set frameworks and guidelines to start with. One was aware that it was a highly experimental role which would require innovation, creativity and a penchant to work in systems with significant bureaucratic and political undertones.

The Trusts anchored this process under the guidance of the PMC and worked on several iterations to arrive at the scope and the Key Result Areas (KRAs) for this role. Joint interviews were conducted by the key Trusts and PMC officials to identify the appropriate candidate. With consensus on the overall mandate of the role - of enabling efficient, transparent and accountable service delivery and governance - in October 2017, the first CDO in the country was deputed to PMC.

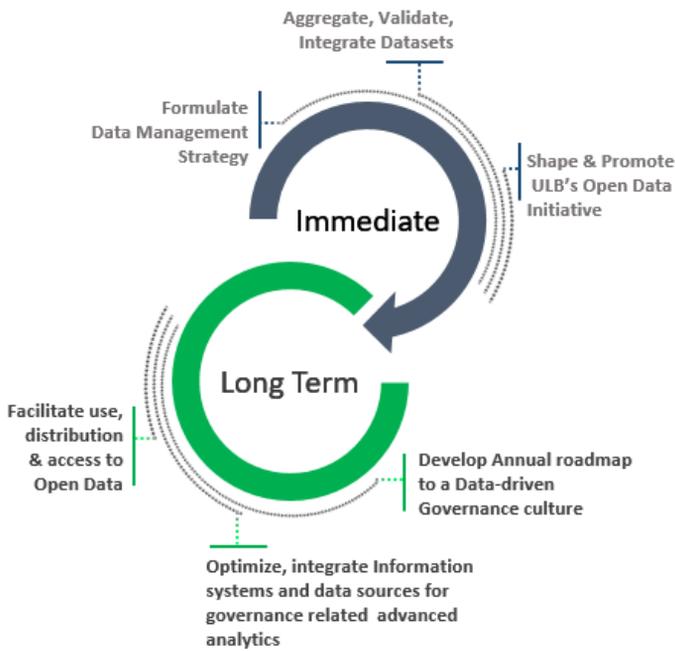


Figure 2: Snapshot of a CDOs KRA

B. Implementation Modalities

The CDO was required to have relevant experience in the domains of Information Technology, Handling of Data Systems and Project Management. Previous leadership experience was essential, and a prior experience of working with or handling government systems was required. The CDO was placed in the IT Department of PMC, to ensure a working alignment with the technology systems

B.1 Immediate Priority

- i. To promote data usage in alignment with the ULB's Open Data Vision and Initiative.
- ii. To formulate the Data Management and Engagement Strategy of the ULB
- iii. To advise the ULB and its departments on the utility and

value of maintaining an inventory of standardized datasets, and supporting concerned officials in doing so.

- iv. Responsible for aggregation and validation of internal and external data sets, and produce insights using data analytics frameworks. To proactively use data driven insights for promotion of effective urban governance.
- v. To review and provide feedback on existing data dashboards and maintain accuracy levels in line with the ULB's vision. To regularly update the features and data sets on the City Open Data Portal.

B.2 Long Term

- i. To facilitate use, reuse and redistribution of Open Data - a ULB collects, processes and generates a large amount of data in its day-to-day functioning. But a large quantum of government data remains inaccessible to citizens, civil society, even when this data is largely non-sensitive in nature and could be used by public for social, economic and developmental purposes.
- ii. To work with Government Agencies to design and develop an annual roadmap for nurturing and institutionalizing a data driven culture at the ULB.
- iii. Define Standards for Data Collection and Management for respective departments and ensure associated compliances.



Figure 3: Roles of a CDO

- iv. To demonstrate and promote the value of data analytics; and leverage support from government and non-government stakeholders towards showcasing the same.
- v. To identify, optimize and integrate information systems & external resources (Datamarts, Datasets and Databases) and tools (Platform, APIs) for data visualization and advanced analytics.
- vi. To support the data needs of the ULB and its departments towards certification by various agencies such as World Council on City Data(WCCD), Resilient Cities, Census etc. and regular data requirements of the government such as the Livability Standards, Ease of Living, RTI, Census Survey, NSSO, Election Data etc.

C. Roles & Responsibilities

The buckets of functioning of the CDO are categorized below:

C.1 Data Integration

- i. Aggregate and validate internal and external data sets
- ii. Produce insights through application of data analytics frameworks
- iii. Build a digital transformation roadmap built on the 3 pillars of data governance, data quality and data integration
- iv. Build an open data roadmap through the Open Data Government of India Policy
- v. Proactively promote data driven insights for promotion of effective urban governance

C.2 Service Optimization

- i. Improve operational efficiency and agility within ULB
- ii. Provide technical expertise on service optimization parameters related to digital citizen services and employee workflows within the corporation
- iii. Track service delivery parameters through available decision support systems
- iv. Capacitate mid to senior level ULB officials on tenets of technology usage for effective urban governance and to improve their existing data management processes

C.3 Innovation & Competitive Advantage:

- i. Promote research & innovation through the Open Data Portal
- ii. Use data as an asset for ULB – monetization roadmap (e.g.: Infrastructure Investment Indexing, Modelling and Analytics)
- iii. Work with public and private entities to enable usage of data for public service delivery projects

C.4 Knowledge Management

- i. Represent the ULB at conferences through presentations and research papers to ensure a steady flow of knowledge creation

entities, academic and research organizations and civil society organizations coming into the fore, actively contributing datasets/feeds to the Portal, and facilitating hackathons and challenges to further research on the open data.

- iii. Advisory support provided for streamlining of vendor managed datasets/feeds including critical aspects of data monetization, licensing and ownership.

The Impact

The CDO in Pune is currently in the second year of appointment. The impact articulated in the first year includes:

- i. One of the key achievements of the CDO has been to effectively populate the Open Data Portal (with approximately 450 datasets) under the Open Data Policy of the Government of India within the first year. This was done not only to increase the number of data sets, but also with a view of increasing the value and depth of the data sets.
- ii. The activation of the Open Data Portal led to the setting up of an informal City Data Alliance, with members from private sector

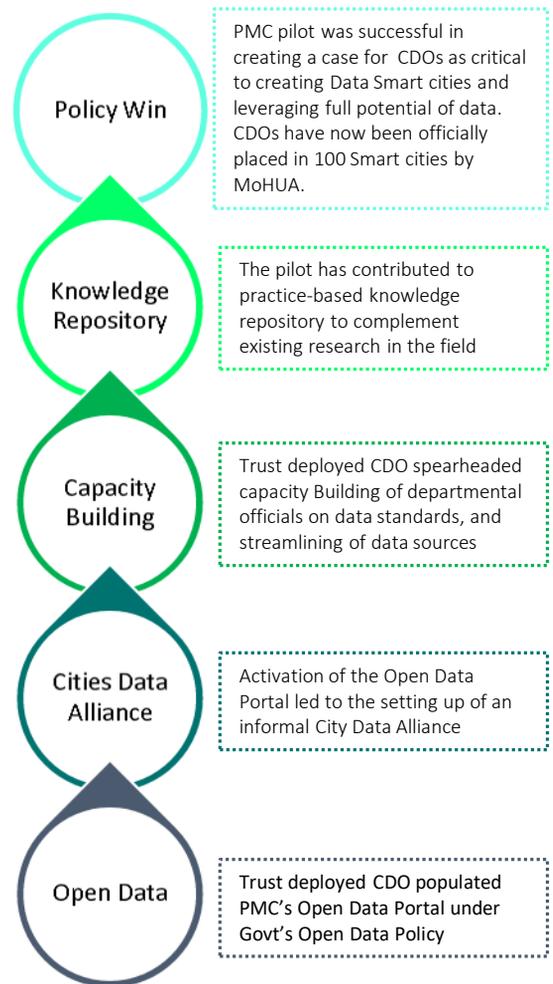


Figure 4: Impact of CDO deployment in PMC

- iv. Capacity Building of departmental officials on data standards, and streamlining of data sources through the implementation of benchmarking exercises such as the ISO 37120 and the Livability Standards.
 - v. Several research papers have been published in association with IEEE, Pune University, NIMHANS and COEP.
 - vi. A year after the deputation of the first CDO in Pune, appointment of a CDO has been included in the Human Resource guidelines for Smart Cities. The Ministry of Housing and Urban Affairs has also driven appointments of City Data Officers in 100 Smart Cities during the launch of the [DataSmart Cities Strategy](#) in February 2019.
- II. The role of the Municipal Commissioner and support of the senior leadership especially the IT department is critical to the success of this role and for its incumbent to gain both access and acceptability within the government system and function effectively.
 - III. It became increasingly evident that people management and change management skills were equally critical to a CDO's functioning, as were the technology and data handling skillsets. So is the ability to bridge the language of governance, data and technology, and to juggle between the two. A major part of the day to day work of the CDO involves liaising with departmental officials to collect, sanitize and use data with a fresh approach, in a manner which is more aligned to planning and impact measurement.

Lessons Learned

- I. Given that a part of the brief was to enhance the "data culture" of PMC, the CDO was actively involved in populating the ISO 37120 data sets for Year 2, which not only helped the resource to get fully embedded into the culture and working of the ULB (a mindset shift for private sector professionals), but also get a sense of the quality and availability of data sets within PMC. This greatly helped the implementation of the Livability standards driven by MoHUA at a later stage, given the overlap between both exercises.
- IV. One of the key achievements of the CDO was to effectively populate the Open Data Portal (with approximately 450 datasets) under the Open Data Policy of the GoI. This was done not only to increase the number of data sets, but also with a view of increasing the value and depth of the data sets (data availability for linked parameters).
 - V. Capacity building of municipal officials was a continual part of the CDO's role – to hand hold officials to improve, refine and revamp their existing data management processes in line with the governance mandate of the corporation.

- VI. A component which evolved during the first year of engagement, was to involve citizen's groups, civil society organizations, academia, research entities and corporates to participate in the data transformation journey of the corporation.
- VII. This came in the form of research projects, hackathons, and data sharing by NGOs/CSOs from previous projects (slum level data, GIS data, ward level asset maps).
- VIII. It will be worthwhile to note that every ULB is at a different state of maturity on the data and analytics value chain. This mandates a certain level of fluidity to the CDO engagement framework, to be able to add value to the city's data enabled governance journey as is, while envisioning a short and medium term plan for the city.
- IX. It takes a minimum of two years to demonstrate the complete set of possibilities associated with a new position such as a CDO. The first year is geared at understanding the state of data and building departmental inroads while fulfilling certain low hanging expectations of the corporation, while the second year looks at more intensive and productive forms of engagement.
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Abbreviations

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
CDO	City Data Officer
ICCC	Integrated Command and Control Centre
IOT	Internet of Things
ISO	International Organization for Standardization
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
MSI	Master System Integrators
NeGP	National e-Governance Plan
PMC	Pune Municipal Corporation
SCM	Smart Cities Mission
TCS	Tata Consultancy Services
ULB	Urban Local Body

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Report:

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Suggested Citation:

Dore,P, Parija,S, Swani,S. 2019. "India's First City Data Officer-Recounting our Learnings & Experiences from Pune". Urban Caselet Series. Tata Trusts. July 2019.

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